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SMALL AREA STATISTICS: PROBLEMS WITH VITAL STATISTICS RATES

For many years—since 1932—the Division of Health Services has published resident birth and death rates for North Carolina counties and major cities. While aware of certain inconsistencies between recording of residence on birth and death certificates and Census enumerations of resident populations, we regarded the magnitude of these inconsistencies as minimal and have proceeded to do the job we felt charged to do, that is, to generate and disseminate data presumably helpful to health officials and researchers in identifying the particular health problems of cities, counties and various regions of the state.

Beginning with 1975 vital statistics reports, however, we had come to recognize that annexations generally preclude reliable intercensal city population estimates in the required detail, and we discontinued the computation of birth and death rates. At the same time, we felt reasonably secure in the use of census data and corresponding vital event data and early this year computed 1968-72 age-race-sex-adjusted death rates (cause-specific) for 38 cities, those that were incorporated and exceeded 10,000 population in 1970. Findings were reported in a PHSB study entitled "Mortality in North Carolina Cities" (1) after satisfying ourselves that data counts were correct (insofar as original sources were correct) and that adjustment procedures were accurately programmed. Also at that time, we investigated whether Morganton's low death rate (lowest of the 38 cities) might be due to the inclusion of Broughton Hospital residents in rate denominators. According to Rand McNally (2) and later, the Bureau of the Census (personal communication), Morganton's 1970 population of 13,625 excluded Broughton Hospital which was reported "outside corporate limits." Thus, we published these data, providing—for the first time ever—comparisons of mortality levels among cities on a cause-specific basis. These data, which showed wide variation in age-race-sex-adjusted city mortality levels, were widely publicized by the news media and generated considerable interest and concern among health officials and researchers.

Detection of Problems: The Morganton Case

Contrary to earlier information, we are now informed by the Bureau of the Census that Morganton's 1970 population count did include Broughton Hospital residents in accordance with the city map for 1970. This map did not identify Broughton Hospital as a "political island" as was true of the map used in the 1960 Census. Hence, since deaths to residents of long-term health and penal institutions are by state regulation allocated to the decedent's place of residence prior to admission (3), Morganton's "population at risk" (denominator used in rate computation) was substantially inflated, Broughton Hospital accounting for about 2,100 of Morganton's 13,625 residents in 1970. This contributed greatly to Morganton's having the lowest of the 38 city death rates.

All other things being equal, other cities with sizable inmate populations within their corporate boundaries similarly would have artificially low death rates. Among the 38 cities, Salisbury and Raleigh appear particularly at risk, based on the